

Application No. 10/736,485

Reply to Office Action

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently Amended) A hydrodynamic static mixing apparatus comprising a preselected and predetermined configuration and length of undulating tubular conduit for mixing and/or transporting various substances, including fluids and solids contained in slurries, said conduit including a generally round internal cross-section having a hydraulic radius r_c and a generally helical undulation having a path radius r_h , said conduit, including an open inner channel along the longitudinal axis of the conduit, the inner channel having a radius r_i that is substantially equal to $r_c - r_h$ and said conduit being adapted to be incorporated into systems that perform one or more of the functions of fluid or slurry transport, processing and separation.

2-13. (Canceled)

14. (Original) A hydrodynamic static mixing apparatus as claimed in claim 1 wherein said conduit is interposed at various stages of either separate, or simultaneous, transportation, processing and separation of oil-laden fluids in an oil sands bitumen extraction system.

15. (Currently Amended) A hydrodynamic static mixing apparatus as claimed in claim 1 wherein said conduit has an interior undulating structure at the upper portions thereof, which provide a serpentine path that causes dynamic mixing of its flowing contents due to primary and secondary flow patterns.

16. (Currently Amended) A method of static mixing of flowing fluids comprising the steps of providing a preselected and predetermined length of undulating interior elongated tubular conduit, said conduit including a generally round internal cross-section having a hydraulic radius r_c and a generally helical undulation having a path radius r_h , said conduit, including an open inner channel along the longitudinal axis of the conduit, the inner channel having a radius r_i that is substantially equal to $r_c - r_h$ connecting said conduit to a conduit of a system providing one or more of the steps of fluid transportation, processing or separation, and pumping fluidized material through said undulating interior elongated tubular conduit at some stage of fluid passage through said system.

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17. (Original) A method as claimed in claim 16 wherein said stage is an initial mixing stage for conditioning a slurry.

18. (Original) A method as claimed in claim 16 wherein said stage is in transportation of a slurry to keep the contents in suspension.

19. (Original) A method as claimed in claim 16 wherein said stage is in a transportation pipeline system to revitalize the contents.

20. (Original) A method as claimed in claim 16 wherein said stage is in a froth piping system to wash the froth.

21. (Original) A method as claimed in claim 16 wherein said undulating interior elongated tubular conduit is interposed at various stages of passage of oil-laden fluids through an oil sands bitumen extraction system.